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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,205	09/24/2003	Sarah E. Kim	ITL.1040US (P14807)	2630
21906	7590	05/23/2005	EXAMINER	
TROP PRUNER & HU, PC 8554 KATY FREEWAY SUITE 100 HOUSTON, TX 77024			ISAAC, STANETTA D	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/669,205

Applicant(s)

KIM ET AL.

Examiner

Stanetta D. Isaac

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 14 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 and 16-21 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6 and 7 is/are rejected.
- 7) ☒ Claim(s) 3-5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This Office Action is in response to the amendment filed on 2/24/05. Currently, claims 1-7, 14 and 16-21 are pending.

#### *Specification*

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Jankowski et al. Patent Application Publication US 2004/0072039.

Jankowski discloses the semiconductor method as claimed. See figures 1-11, and corresponding text, where Jankowski teaches a method comprising: forming a trench 906 (host structures) in each of two semiconductor substrates (figures 5, 9 and 10; paragraphs [0023], [0025] and [0045-0046]); providing a catalyst 904 in a trench (figures 9 and 10; paragraph [0044-0046]); and combining said substrates in a face-to-face abutment with said trenches (host structures) in alignment with one another (figures 9 and 10; paragraph [0029] and [0044-0046], *Note*: the Examiner takes the position that the substrates are in a face-to-face abutment, since

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Jankowski teaches, that the host structure consists of silicon wafers that have channels (implied trenches) etched within the silicon wafers, and are bonded together to form flow channels).

Pertaining to claim 2, Jankowski teaches the method including forming a channel **920/922** that communicates from opposed ends of each trench to the edge of each substrate to allow fluid to circulate through the substrates via channels and the trenches (figure 9; paragraphs [0029] and [0044]).

Pertaining to claim 6, Jankowski teaches the method including depositing the catalyst in the trench (figure 9; paragraph [0044]).

Pertaining to claim 7, Jankowski teaches the method including depositing platinum or lead in said trench (figure 9; paragraph [0045] platinum).

#### ***Allowable Subject Matter***

Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The closest prior art of record, fails to show, combining the substrates using copper-to-copper bonding that includes masking the catalyst to avoid coating the catalyst with the copper, and lifting off the resist to remove the copper from the catalyst.

Claims 14, 16, 17, 18-21 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

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The closest prior art of record, Jankowski et al. Patent Application Publication US 2004/0072039, fails to show the following steps:

Pertaining to independent claim 14, “protecting said catalyst when forming said channels.”

Pertaining to independent claim 18, “combining two substrates using copper-to copper bonding,”

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

#### ***Response to Arguments***

Applicant's arguments filed 2/24/05 have been fully considered but they are not persuasive.

In response to the Applicant's Remarks, page 4:

Applicant raises the clear issue of whether Jankowski teaches forming a trench in each of two semiconductor substrates and combining the substrates in face-to-face abutment with the trenches in alignment.

The Examiner takes the position that a method comprising combining the substrates in face-to-face abutment with the trenches in alignment are shown, within figures 9 and 10, and paragraphs [0029] and [0044-0046]. Specifically, Jankowski teaches, that the host structures 906/908 and consists of silicon wafers that have channels (implied trenches) etched within the silicon wafers, and are bonded together to form flow channels.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanetta D. Isaac whose telephone number is 571-272-1671. The examiner can normally be reached on Monday-Friday 9:30am -6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stanetta Isaac  
Patent Examiner  
May 15, 2005



**MICHAEL LEBENTRITT**  
**SUPERVISORY PATENT EXAMINER**